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EXAMINER	
MAKI, STEVEN D	
ART UNIT	**PAPER NUMBER**
1733	

DATE MAILED: 02/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/784,655	HILDEBRAND, VOLKER	
	Examiner	Art Unit	
	Steven D. Maki	1733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-33 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-33 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 072004.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1) The disclosure is objected to because of the following informalities: All occurrences of "land-sea surface area" should be changed to --land-sea surface area ratio-- and all occurrences of "void volume" should be changed to --void volume ratio-- to make it clear that ratios instead of values with units such as mm^2 and mm^3 are being described.

Appropriate correction is required.

2) The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3) Claims 1-33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 1-33, the description of "void volume" and "land-sea surface area" is ambiguous. In claims 1-33, all occurrences of "land-sea area" should be changed to --land-sea surface area ratio-- and all occurrences of "void volume" should be changed to --void volume ratio-- to make it clear that ratios instead of values with units such as mm^2 and mm^3 are being described.

In claim 31, "curves" on the last line should be --grooves--

4) The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Mirtain et al

5) **Claims 1-8 and 10-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mirtain et al (US 4387754) in view of Hitzky (US 5381816), Japan 105 (JP 63-159105) and Japan 703 (JP 58-177703).**

Mirtain et al discloses a pneumatic tire having a size such as 195/70HR14. The tire has a tread comprising at least three ribs such as five ribs. Figure 5 shows a tread having four circumferential grooves and five ribs. Each of the ribs comprises transverse notches (lateral grooves) and incisions (sipes). The tire displays good water removing capacity and accurate steering. Mirtain et al is silent as to the shoulder rib having a width of about 17% to about 19% of the tread width.

As to claim 1, it would have been obvious to one of ordinary skill in the art to provide Mirtain et al's tire tread having four circumferential grooves and five ribs such that **each shoulder rib has a width of about 17% to about 19% of the tread width** since (1) Hitzky suggests providing a tire tread having four circumferential grooves and five rib-like land portions such that the shoulder rib-like land has a width of 19% to 26.5% of the tread width (RW4 = 22-28% TW, circumferential groove width = 3-6%) *so that the tire has high lateral stiffness for improved handling* (col. 5 lines 30-35) and (2) Japan 105 suggests providing a tire tread having four circumferential grooves and five ribs such that the width of the shoulder rib "corresponds" to 15% to 22.5% of the tread width (ratio B/A = 55-70%) so as to *enhance for example maneuvering stability.*

Furthermore, it would have been obvious to one ordinary skill in the art to provide Mirtain et al's grooves with a groove cross section comprising a rounded bottom and

groove walls inclined at 2-45 degrees with respect to the radial direction (alpha = 92-135 degrees with respect to the tread surface) such that the land -sea surface area ratio (100% minus net-to-gross) is 4-8% larger than the void volume ratio since (1) Hitzky suggests providing a tread having four circumferential grooves and five rib-like land portions and a smooth quiet ride with a land sea surface area ratio of 30% to 34% (100% minus net-to-gross ratio of 66% to70%) and (2) Japan 703 suggests grooves with a groove cross section comprising a rounded bottom and grooves walls inclined at 2-45 degrees (e.g. 4 degrees) with respect to the radial direction (alpha = 92-135 degrees (e.g. 94 degrees) with respect to the tread surface) to *prevent groove bottom cracking and catching of rubber at mold releasing while avoiding worsening of drainage*. See abstract and table 2 of Japan 703. If the grooves and sipes have constant width along the depth thereof (e.g. the groove and sipe walls are oriented at zero degrees with respect to the radial direction / perpendicular to the tread surface), then the sea-land surface area ratio equals the void volume ratio. Since one of ordinary skill in the art would readily understand that the sipes have constant width (see for example col. 2 lines 33-37 of Hitzky), using an angle of greater than 0 degrees with respect to the radial direction for the groove walls causes the void volume ratio to be larger than the sea-land surface area ratio. The limitation of the void volume ratio being 4-8% larger than the sea-land surface area ratio is suggested by Japan 703's disclosure to incline groove walls at an angle of 2-45 degrees (e.g. 4 degrees) with respect to the radial direction to facilitate molding of the tread.

Hence, Hitzky et al and Japan 105, which teach a tread pattern generally similar to that of Mirtain et al, suggest using a shoulder rib width in the claimed range of about 17% to about 19% tread width to improve handling. With respect to 4-8% larger, Japan 703 suggests inclining groove walls at an angle of 2-45 degrees (e.g. 4 degrees) with respect to the radial direction to facilitate molding; it being emphasized that such an inclination necessarily makes the sea-land surface area ratio larger than the void volume ratio.

As to claim 2, Mirtain et al teaches five ribs.

As to claims 3-8, note the suggestion from Hitzky to use a sea-land ratio of 30-34% and Japan 703's teaching incline the groove walls at an angle such as 4 degrees with respect to the radial direction.

As to claim 10, note the shoulder rib width suggested by Hitzky and Japan 105.

As to claims 11-16, Mirtain et al teaches using the same depth for the lateral grooves (transverse notches) and non-skid depth (depth of circumferential grooves). See col. 3 lines 33-38. With respect to claim 13, it is taken as well known / conventional per se in the tire tread art to provide a wear indicator protruding from the bottom of a groove so that unacceptable tire tread wear can be determined by visual inspection.

As to claims 17-18, the claimed ratio for the shoulder sipes would have been obvious in view of the arrangement of the sipes (incisions) in the shoulder rib shown by Mirtain et al in figure 5.

As to claim 19, Mirtain et al's center and intermediate ribs have "lateral grooves" (transverse notches) and sipes ("incisions").

As to claims 20-26 and 29, the claimed arrangement of sipes / U-shaped sections / I-shaped sections would have been obvious to one of ordinary skill in the art in view (1) Mirtain et al's teaching to arrange lateral grooves as shown in figures 1-2 and 5-6 and (2) Mirtain et al's suggestion to arrange sipes between adjacent lateral grooves (figures 5, 6). It is noted that claims 20-26 and 29 fail to require the sipes and I-shaped sections to extend to the circumferential grooves. With respect to claims 24 and 25, it would have been obvious to provide Mirtain et al's sipes such that they are curved as claimed since it is taken as well known / conventional per se in the tire tread art to provide sipes such as isolated sipes with a straight or curved shape.

6) **Claims 32 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mirtain et al in view of Hitzky, Japan 105 and Japan 703 as applied above and further in view of Landers (US 4474223).**

As to claims 32 and 33, it would have been obvious to one of ordinary skill in the art to use three different pitches and a total of 66-70 pitches for Mirtain et al's tire tread since Landers suggests using three different pitches and total of 45-75 pitches for a tire tread to reduce noise; a tire diameter of 620-690 being taken as a well known / conventional tire size for a pneumatic tire.

Japan 913 (curved sipes intersecting circumferential grooves)

7) **Claims 1-11, 19, 23-25 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japan 913 in view of in view of Hitzky, Japan 105 and Japan 703 .**

Japan 913 discloses a pneumatic tire having a tread comprising four circumferential grooves, five circumferential ribs, lateral grooves in the ribs and curved sipes in the ribs. Japan 913 does not recite the shoulder ribs having a width of about 17% to about 19% of the tread width.

As to claims 1-11, 19, 23-25 and 30, it would have been obvious to one of ordinary skill in the art to provide Japan 913's tire tread having four circumferential grooves and five ribs such that **each shoulder rib has a width of about 17% to about 19% of the tread width** since (1) Hitzky suggests providing a tire tread having four circumferential grooves and five rib-like land portions such that the shoulder rib-like land has a width of 19% to 26.5% of the tread width (RW4 = 22-28% TW, circumferential groove width = 3-6%) *so that the tire has high lateral stiffness for improved handling* (col. 5 lines 30-35) and (2) Japan 105 suggests providing a tire tread having four circumferential grooves and five ribs such that the width of the shoulder rib "corresponds" to 15% to 22.5% of the tread width (ratio B/A = 55-70%) so as to *enhance for example maneuvering stability.*

Furthermore, it would have been obvious to one ordinary skill in the art to provide Japan 913's grooves with a groove cross section comprising a rounded bottom and groove walls inclined at 2-45 degrees with respect to the radial direction (alpha = 92-135 degrees with respect to the tread surface) such that the land -sea surface area ratio (100% minus net-to-gross) is 4-8% larger than the void volume ratio since (1) Hitzky suggests providing a tread having four circumferential grooves and five rib-like land portions and a smooth quiet ride with a land sea surface area ratio of 30% to 34%

(100% minus net-to-gross ratio of 66% to 70%) and (2) Japan 703 suggests grooves with a groove cross section comprising a rounded bottom and grooves walls inclined at 2-45 degrees (e.g. 4 degrees) with respect to the radial direction (alpha = 92-135 degrees (e.g. 94 degrees) with respect to the tread surface) to *prevent groove bottom cracking and catching of rubber at mold releasing while avoiding worsening of drainage*. See abstract and table 2 of Japan 703. If the grooves and sipes have constant width along the depth thereof (e.g. the groove and sipe walls are oriented at zero degrees with respect to the radial direction / perpendicular to the tread surface), then the sea-land surface area ratio equals the void volume ratio. Since one of ordinary skill in the art would readily understand that the sipes have constant width (see for example col. 2 lines 33-37 of Hitzky), using an angle of greater than 0 degrees with respect to the radial direction for the groove walls causes the void volume ratio to be larger than the sea-land surface area ratio. The limitation of the void volume ratio being 4-8% larger than the sea-land surface area ratio is suggested by Japan 703's disclosure to incline groove walls at an angle of 2-45 degrees (e.g. 4 degrees) with respect to the radial direction to facilitate molding.

Hence, Hitzky et al and Japan 105, which teach a tread pattern generally similar to that of Japan 913, suggest using a shoulder rib width in the claimed range of about 17% to about 19% tread width to improve handling. With respect to 4-8% larger, Japan 703 suggests inclining groove walls at an angle of 2-45 degrees (e.g. 4 degrees) with respect to the radial direction to facilitate molding; it being emphasized that such an

inclination necessarily makes the sea-land surface area ratio larger than the void volume ratio.

Lopez (pair of oppositely curved sipes)

8) **Claims 1-11, 17-27, 29 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lopez 652 (US Des. 462,652) in view of in view of Hitzky, Japan 105 and Japan 703 and optionally Lopez 552 (US 6874552).**

Lopez 662 illustrates a tread of a tire comprising four circumferential grooves, five ribs and lateral groves in the ribs. Lopez 662 also illustrates sipes in the ribs. One of ordinary skill in the at would readily understand that in order to use Lopez 662's design, the illustrated tread can and should be incorporated in an actual tire. One of ordinary skill in the art would also readily understand that the black lines crossing the ribs (including the oppositely curved lines in the center and intermediate ribs) are sipes. See Hitzky at col. 2 lines 33-37 and optionally figure 12 of Lopez 552. Lopez 662 does not recite providing the shoulder rib with a width of about 17% to about 19% of the tread width.

As to claims 1-11, 17-27, 29 and 31, it would have been obvious to one of ordinary skill in the art to incorporate Lopez 652's tire tread pattern into a pneumatic tire with four circumferential grooves, five ribs, lateral grooves and sipes such that **each shoulder rib has a width of about 17% to about 19% of the tread width** since (1) Hitzky suggests providing a tire tread having four circumferential grooves and five rib-like land portions such that the shoulder rib-like land has a width of 19% to 26.5% of the tread width (RW4 = 22-28% TW, circumferential groove width = 3-6%) *so that the tire*

has high lateral stiffness for improved handling (col. 5 lines 30-35) and (2) Japan 105 suggests providing a tire tread having four circumferential grooves and five ribs such that the width of the shoulder rib "corresponds" to 15% to 22.5% of the tread width (ratio B/A = 55-70%) so as to *enhance for example maneuvering stability.*

Furthermore, it would have been obvious to one ordinary skill in the art to provide Lopez 652's grooves with a groove cross section comprising a rounded bottom and groove walls inclined at 2-45 degrees with respect to the radial direction (alpha = 92-135 degrees with respect to the tread surface) such that the land -sea surface area ratio (100% minus net-to-gross) is 4-8% larger than the void volume ratio since (1) Hitzky suggests providing a tread having four circumferential grooves and five rib-like land portions and a smooth quiet ride with a land sea surface area ratio of 30% to 34% (net-to-gross ratio of 66% to70%) and (2) Japan 703 suggests grooves with a groove cross section comprising a rounded bottom and grooves walls inclined at 2-45 degrees (e.g. 4 degrees) with respect to the radial direction (alpha = 92-135 degrees (e.g. 94 degrees) with respect to the tread surface) to *prevent groove bottom cracking and catching of rubber at mold releasing while avoiding worsening of drainage.* See abstract and table 2 of Japan 703. If the grooves and sipes have constant width along the depth thereof (e.g. the groove and sipe walls are oriented at zero degrees with respect to the radial direction / perpendicular to the tread surface), then the sea-land surface area ratio equals the void volume ratio. Since one of ordinary skill in the art would readily understand that the sipes have constant width (see for example col. 2 lines 33-37 of Hitzky), using an angle of greater than 0 degrees with respect to the radial direction for

the groove walls causes the void volume ratio to be larger than the sea-land surface area ratio. The limitation of the void volume ratio being 4-8% larger than the sea-land surface area ratio is suggested by Japan 703's disclosure to incline groove walls at an angle of 2-45 degrees (e.g. 4 degrees) with respect to the radial direction to facilitate molding.

Hence, Hitzky et al and Japan 105, which teach a tread pattern generally similar to that of Lopez 652, suggest using a shoulder rib width in the claimed range of about 17% to about 19% tread width to improve handling. With respect to 4-8% larger, Japan 703 suggests inclining groove walls at an angle of 2-45 degrees (e.g. 4 degrees) with respect to the radial direction to facilitate molding; it being emphasized that such an inclination necessarily makes the sea-land surface area ratio larger than the void volume ratio.

Allowable Subject Matter

9) **Claim 28 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.**

Remarks

10) The remaining references are of interest.

11) Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven D. Maki whose telephone number is (571) 272-1221. The examiner can normally be reached on Mon. - Fri. 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Steven D. Maki
February 21, 2006

STEVEN D. MAKI 2-21-06
PRIMARY EXAMINER